GOVERNMENT ENGINEERS MAKING GARDENS GREAT AMERICAN DESERT

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ple as does the valley of the Nile they will feed something like seventy-seven millions.

This means results which are far in the future and somewhat beyond what the engineers now claim. Mr. Blanchard tells me that there will undoubtedly be enough land for one million families, and in this he estimates the farms at thirty or forty acres each. One acre of any of these oases is equal to five or ten acres of Illinois or Iowa, and it is said that a family can be supported on a five or ten acre patch. About one million acres have already been covered with water, and homes by the hundreds are being cut out of the sand. On many of the oases towns have already gone up, street railroads have been built, schoolhouses and other public buildings constructed and social and politicommunities are well under way.

What Has Been Done.

Let me run over some of the projects and tell you a little of what has been done. Take Yuma on the Colorado river on the southeastern boundaries of Arizona and California. There is a dam there almost a mile long, that is as high as a two-story house, which will eventually irrigate about 97,000 acres of land. The dam was completed about two years ago and a distribution system of 187 miles of canals has been laid out and is well under way. The lands here are partly in Arizona and partly in California. The total area redeemed will be about 100,000 acres, of which 80,000 will be in Arizona. About 5,000 acres of land are already under irrigation on the California side of the river and other lands are open to settlement.

The country never has frost and its hot tropical sun fits it for the cultivation of oranges, lemons, grapefruit, dates, etc. It is an ideal region for ostriches, and it will vie with South Africa in the raising of feathers for our American market.

Jumping to the extreme north, where the Shoshone river has now been turned on the lands, a number of towns have been laid out and some are fast growing. Cody, which was named after Buffalo Bill, has a population of 2,500, with three banks, stores, lumber yards and hotels. An electric plant furnishes the town with light and power, and it has a sulphur plant, a brickyard and a flour mill, which grinds 125 barrels every day. Garland, another town, has about 500 people, and Powell and Ralston are other settlements which are rapidly growing. Here the soil is a rich, sandy loam, fitted for alfalfa, grain and deciduous fruits. There is a grazing country about and the unirrigated lands are well fitted for sheep.

The Work in Montana.

From Shoshone let us go north into Montana and take a look at Huntley, Northern Pacific and the C., B. & Q. railroads, on the south bank of the Yellowstone river. Here lie about 29,000 acres upon which Uncle Sam has put water, and which he is now giving out to settlers in tracts of forty acres and eighty acres each. The most of the farmers think forty acres enough to yield a good income and say that is all the land one man can comfortably handle. They tell, however, of extraordinary yields of vegetables, sugar beets, fruits and grain, and are making good in every possible way. The town of Huntley is fast growing and it has churches, banks and hotels. Osborn is another town which has sprung up, and near it is Ballantine, which has five stores and a postoffice, while Warden and Newton are also fast growing.

The irrigation system here was practically completed in 1907, and hundreds of families are now on the lands. Many are raising alfalfa, which they sell for $8 a ton, and not a few have diversified crops, from which they are getting from $800 to $2,000 per annum on their forty-acre farms. Nevertheless, the soil had not been scratched by the plow before the government took hold of it. Uncle Sam had to spend a million dollars before it was ready for settlement, but the lands are now being paid for and every cent of this money will eventually come back into the treasury.

Where Apple is King.

Going westward into Oregon and Washington, we reach the fruit lands where the chances are even greater than in the irrigated sections farther east. Here are the Yakima projects in a region where full bearing apple orchards produce crops worth from $300 to $1,200 per acre, and where peaches do quite as well. Yakima county is shipping hundreds of thousands of boxes of apples each year, and millions of young trees are now growing. Alfalfa hay brings there $5 a ton in the stack, and in one year the valley where this project is situated sold its hay crop for $2,000,000. This is a country of towns, newspapers and up-to-date people. There are many private irrigation works under way, and the products of the valley are so well known that they command a ready market. It is a land of banks, schools and churches, and one where the social conditions are already established. The government estimates that by proper storage sufficient water can be saved to irrigate 460,000 acres, and a large area is now under water. Dams have been put up, canals dug, and the farmers are tilling the soil. The cost of the land on the ten-year instalment plan is $52 per acre, and the maintenance charge is 95 cents per acre per annum. This seems rather high for one who does not understand the conditions, but when it is remembered that orchards are worth from $500 to several thousand dollars per acre, when they have once come into bearing, the possible profits are plain.

Salt River Project. Apache Indians Aided in the Government Work.

Another fruit project in Washington is the Okanogan, which will redeem 10,000 acres of high-grade fruit lands This is completed.

Going south we come to the Umatilla irrigation works on the edge of Washington, in northern Oregon. Here an earthen embankment a half mile long and 100 feet high will hold back the floods. The soil is porous and many of the canals have been lined with cement on that account. Several towns have grown up in this region, of which Hermiston has a thousand or more population.

California Works.

Still farther south is the Klamath project, on the boundary of Oregon and California, which will reclaim 190,000 acres. Of this about 30,000 acres are already under water, and about 40 per cent of the work has been completed. A storage dam has been built which makes Clear lake a reservoir, and there are other storage projects which will ultimately irrigate this vast tract of land.

The Orland project in northern California is also progressing. About 77 per cent of the work is completed, and the East Park dam there will store water for about 14,000 acres. The dam is 139 feet high, and it has a reservoir capacity of 45,000 acre feet. This lies about ninety miles north of Sacramento on the Southern Pacific railroad. The greater part of it will be opened this year.

The Heart of the Rockies.

Some of the biggest schemes which the government now has under way lie in the heart of the Rockies, or, rather, on the great western plateau. In Utah we have the Strawberry valley project, which will redeem 60,000 acres. It is now 45 per cent completed. In Nevada is the Truckee-Carson project, which involves more than 600 miles of canals, and 50,000 feet of dykes and dams. This, when finished, will irrigate 260,000 acres, and the first unit is now ready.

And then there is the Boise project, where a dam forty-five feet high has been constructed at the mouth of a canyon not far from Boise City. This turns the waters of a river into a canal, which in the non-irrigated season throws them into a reservoir which will store 186,000 acre feet.

The Minnedoka project is already irrigating the Snake River valley, and is furnishing electric power to pump water on to lands which are too high for the gravity canals. The total area there under ditch is 13,000 acres, and about 50,000 acres are being irrigated by pumping.

In Colorado the Gunnison river has been carried under a mountain 2,000 feet high by a tunnel six miles in length into the Uncompahgre valley. This is a part of a scheme which will eventually irrigate 140,000 acres, and the engineering connected with it is most remarkable. The tunnel was made in eight-hour shifts, the work being kept up day and night, and it was completed in the shortest time on record. In one month 823 feet were made, and one gang of laborers dug out 7,500 feet in one year.

Some Operations in Texas and Nebraska.

I have already written of the Pathfinder dam. This is connected with the Nebraska project on the North Platte river, and it includes a diversion dam 600 feet long and 20 feet high which has been built across that river near the station of Whalen. An interstate canal carries the waters stored in the Pathfinder reservoir through this dam over the lands of Wyoming and Nebraska. This project is about three-fourths completed. The canal has been dug to a length of 100 miles, supplying about 80,000 acres of land, and the men are now at work upon reservoirs which are to be filled during the non-irrigated seasons. The watered lands are being settled and are yielding abundant crops.

An interesting situation is that of the Rio Grande project, which is just across the river from Mexico, and as to which Mexico objected, as it diverts the waters of the river which forms the boundary of the two countries. This matter has been settled by the reclamation service placing its dam near the station of Engle, on the Santa Fe system, an agreeing to give the republic of Mexico an annual supply of 60,000 acre feet of water. The reservoir which will be made will have a capacity of about 2,500,000 acre feet, and it will irrigate 180,000 acres. The work is already in progress there. A railroad has been built from Engle to the dam site.

Some Pumping Projects.

In North Dakota the government proposes to pump the water from floating barges in the Missouri river, using the cheap lignite coal which is found everywhere in that region. By this means it will irrigate the Bench lands in the vicinity of Williston and Trenton, ultimately reclaiming perhaps 20,000 acres. During the past year about 2,400 acres have been irrigated in this way.

In South Dakotta the Belle Fourche project has been 83 per cent completed. This is an important system, including a storage reservoir, an enormous storage dam and a large canal. The project will water 100,000 acres of land, of which about half is already supplied.

FRANK G. CARPENTER.

Earning His Sleep.

A little city girl was visiting a friend in the suburbs, and was much impressed by the morning rush of her hostess' father for a certain train.

"Why does your papa go to town every day?" she at last inquired.

"So's to make enough money to sleep out here at night," was the unwittingly shrewd reply.—Chicago Record-Herald.

The Home of a Settler in Mitchell, North Platte Project.